WHAT IS CLAIMED IS:

1. A graphitized fine carbon fiber comprising a hollow space extending along its center axis, and a plurality of graphene sheets, wherein the fiber has an end surface comprising a portion of discontinuity in which ends of graphene sheets are not bonded to one another and at least one portion of continuity comprised of at least one group of graphene sheets in which one graphene sheet is bonded to another graphene sheet adjacent thereto.

2. A graphitized fine carbon fiber according to claim 1, wherein the portion of continuity comprises a bent portion formed of at least three of said groups.

3. A graphitized fine carbon according to claim 1 or 2, wherein the portion of continuity is present at the periphery of the fiber.

4. A graphitized fine carbon fiber according to claim 1 or 2, wherein, at the end surface of the fiber, the area of a region formed of the portion of discontinuity is smaller than that of a region formed of the portion of continuity.

5. A graphitized fine carbon fiber according to claim 1 or 2, wherein the fiber has a BET specific surface area of at least 4 m^2/g, an outer diameter of 2 to 500 nm, and an aspect ratio of 1 to 50.

6. A graphitized fine carbon fiber according to claim 1 or 2, wherein the fiber has at least one region at which the hollow space is partially closed.

7. A graphitized fine carbon according to claim 1 or 2, wherein the fiber contains boron or a boron compound between carbon crystal layers or on a carbon crystal layer, and the ratio of peak height (Id) at a band 1,341 to 1,349 cm^{-1} of a Raman spectrum of the fiber to a peak height (Ig) at a band of 1,570 to 1,578 cm^{-1} of the Raman spectrum is 0.1 to 1.

8. A graphitized fine carbon fiber according to claim 7, wherein the fiber contains boron (B) between carbon crystal layers in an amount of 0.01 to 5 mass%.

9. A method for producing a graphitized fine carbon fiber as recited in claim 1 or 2, which comprises grinding carbon fiber in which the interlayer distance (d002) of carbon hexagonal network layers (002) as measured through X-ray diffraction is at least 0.345 nm, and the ratio of peak height (Id) at a band of 1,341to 1,349 cm^{-1} of a Raman spectrum of the carbon fiber to peak height (Ig) at a band of 1,570 to 1,578 cm^{-1} of the Raman spectrum is at least 1; and thermally treating the thus-ground carbon fiber at a temperature of about 2,000 to about 3,000°C in an inert gas atmosphere.

10. A method for producing a graphitized fine carbon fiber as recited in claim 1 or 2, which comprises grinding vapor grown carbon fiber

produced through thermal decomposition of hydrocarbon, or carbon fiber obtained through heat treatment of the vapor grown carbon fiber at a temperature of about 600 to about 1,300°C in an inert gas atmosphere; and thermally treating the thus-ground carbon fiber at a temperature of about 2,000 to about 3,000°C in an inert gas atmosphere.

11. A method for producing a graphitized fine carbon fiber according to claim 9, wherein the carbon fiber is ground by means of impact grinding employing impact force and dry grinding performed in the presence of neither water nor an organic solvent.

12. A method for producing a graphitized fine carbon fiber according to claim 10, wherein the carbon fiber is ground by means of impact grinding employing impact force and dry grinding performed in the presence of neither water nor an organic solvent.

13. A method for producing a graphitized fine carbon fiber according to claim 10, wherein the vapor grown carbon fiber contains branched vapor grown carbon fiber, and the vapor grown carbon fiber has an outer diameter of 2 to 500 nm and an aspect ratio of 10 to 15,000.

14. A method for producing a graphitized fine carbon fiber according to claim 11, wherein the vapor grown carbon fiber contains branched vapor grown carbon fiber, and the vapor grown carbon fiber has an outer diameter of 2 to 500 nm and an aspect ratio of 10 to 15,000.

15. A method for producing a graphitized fine carbon fiber according to claim 12, wherein the vapor grown carbon fiber contains branched vapor grown carbon fiber, and the vapor grown carbon fiber has an outer diameter of 2 to 500 nm and an aspect ratio of 10 to 15,000.

16. A method for producing a graphitized fine carbon fiber according to claim 9, wherein, when the carbon fiber is thermally treated at a temperature of about 2,000 to about 3,000°C in an inert gas atmosphere, a boron compound is added to the carbon fiber.

17. A method for producing a graphitized fine carbon fiber according to claim 10, wherein, when the carbon fiber is thermally treated at a temperature of about 2,000 to about 3,000°C in an inert gas atmosphere, a boron compound is added to the carbon fiber.

18. A graphitized fine carbon fiber mixture comprising a graphitized fine carbon fiber as recited in claim 1 or 2, in an amount of about 5 vol% to about 90 vol% on the basis of the entirety of the mixture.

19. A graphitized fine carbon fiber composition comprising a graphitized fine carbon fiber as recited in claim 1 or 2.

20. A graphitized fine carbon fiber composition comprising a graphitized fine carbon as recited in claim 1 or 2, in an amount of about 5 to about 90 mass %, the composition being a resin composition.

21. An electrically conductive material comprising a graphitized fine carbon fiber composition as recited in claim 19 or 20.

22. A secondary battery comprising, as an electrode material, a graphitized fine carbon fiber composition as recited in claim 19 or 20.

23. A gas occlusion material comprising a graphitized fine carbon fiber composition as recited in claim 19 or 20.